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THE DESERT DAMPWOOD TERMITE (ISOPTERA: KALOTERMITIDAE) AS A STRUCTURAL PEST IN THE COLORADO DESERT OF SOUTHERN CALIFORNIA*

HANIF GULMAHAMAD
Terminix International,[1] Rancho Cucamonga, California 91730

Abstract.—The desert dampwood termite, *Paraneotermes simplicicornis* (Banks) is found in the Colorado and Mojave deserts of California. This termite is often found associated with dead, dying, or living vegetation within its geographic range. It was not considered a pest of structures in the past. I report an incident where this termite caused significant damage to a home in Cathedral City, California. With urbanization increasingly encroaching on both the high and low deserts of California, the desert dampwood termite can be expected to be found with increasing frequency attacking structures when the right conditions exist for its survival.

Key Words.—Insecta, Isoptera, Kalotermitidae, *Paraneotermes simplicicornis,* structural pest

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The desert dampwood termite, *Paraneotermes simplicicornis* (Banks) was first described in 1920 from specimens taken in 1917 at Laguna, Uvalde County, Texas (Banks & Snyder 1920). The first California record of this species was in 1926 when specimens were taken near Indio, Riverside County, California (Light 1937). The known range of this species is from the 99th meridian to the 117th meridian. The east–west territory traverses about 544 kilometers. The north–south range extends from the 36th parallel (Las Vegas, Nevada) to the 26th parallel (San Blas de Sinaloa, Mexico). This distance is approximately 380 kilometers (Light 1937). In California, *P. simplicicornis* is confined to the Mohave and Colorado deserts where its westernmost records are a few kilometers east of Barstow and a few kilometers east of Cabazon in the lower reaches of San Gorgonio Pass respectively (Light 1937).

The geographic territory inhabited by this termite is arid or semi arid with sparse xerophytic vegetation. In these areas, the desert dampwood termite is found associated with a number of dead, dying, or living native plants (Light 1934, 1937).

Light (1937) reported that although this termite is found in xerophytic situations it has a high moisture requirement. It obtains this moisture either by a subterranean mode of existence, essentially confining its attacks to wood in or on the ground, or by feeding on living plants. The desert dampwood termite has been reported to attack living hedge plants, young citrus trees, and grape vines (Light 1934, 1937; Ebeling 1975; Weesner 1965, 1970). It has caused damage to untreated poles and posts within its range (Light 1934).

In addressing the question as to whether or not the desert dampwood termite is able to attack sound wood, Light (1937) found that: (1) Foragers are unable to attack sound wood except when such wood is in or on the ground or when they

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[1] 9559 Center Avenue, Suite N.

have access to decayed wood, and (2) Even when foragers have moist soil connections, they are unable to survive for long except on decayed wood. Both Light (1931) and Nutting (1966) found that foragers of this termite present in surface wood are the work force of a colony found elsewhere in the soil.

This paper reports on one case where this termite was found attacking sound, dry, structural wood which was over five meters away from the soil.

Case History

On 28 Apr 1993, an inspection was made of a single family, residential, slab-on-grade constructed building located in Cathedral City, California. The owner had called complaining of droppings in a cabinet which is against an exterior perimeter wall. This cabinet abuts the ceiling of the house above the washer and dryer which is adjacent to the kitchen area. Inspection of the upper areas of the cabinet revealed what appeared to be a mud tube about 5.5 centimeters long on the drywall extending downwards from the ceiling. The bottom end of this mud tube was open and pellets were being pushed out from it. These pellets were scattered on the upper shelf of the cabinet. Closer examination using a hand lens revealed that what appeared to be a mud tube was really a similar type of construction made entirely of pellets which were glued together. This evidence suggested that the attic area above should be inspected to determine the source of this infestation.

The attic inspection revealed substantial damage to several ceiling joists. A total of about ten to fifteen ceiling joists exhibited some damage. Vertical and horizontal pellet tubes of varying lengths were found on the ceiling joists. Many of the vertical pellet tubes had rings of pellets around them which had been expelled by the termites. The expelled pellets were loose, friable, and dark brown in color. The damage caused by this termite in construction grade lumber is similar to that caused by subterranean termites in that the tunnels followed the grain of the wood. Pellets were readily evident in these tunnels. Most of these pellets were glued together and thus were not as loose and friable as those produced by termites of the genus *Incisitermes*. The joists were eaten on the inside but the termites seldom broke through to the exterior. They left a thin layer of wood on the outside which offered them protection from the elements and their natural enemies. When the rolled insulation between the damaged ceiling joists was lifted, damage to the paper backing of the insulation was evident in several areas. Piles of pellets were also found adjacent to the ceiling joists near the insulation.

No moisture problem could be found in this area of the attic. There was no evidence of plumbing or roof leaks in the entire attic. The damaged ceiling joists were completely dry wood. In this area of the eastern Colorado desert, it is common to find daytime attic air temperatures ranging from 50° C to 55° C or more during the hot summer months.

Probing of the infested joists revealed all stages of nymphs and several soldiers. The damage to the ceiling joists was so severe that the termite inspector expressed great reluctance to step on them because he feared that he might fall through the ceiling. Portions of some of these ceiling joists were so damaged that large chunks of wood could be removed with one's bare hands. Figure 1 shows three pieces of wood which were taken from damaged ceiling joists of the infested property at Cathedral City. What appeared to be mud tubes in these samples are really pellets

Figure 1. Portions of ceiling joists showing desert dampwood termite damage with fecal pellets glued together in the tunnels.

which are glued together. The termites confined their attack to the ceiling joists of this property and they did not go any higher in the attic. An interior inspection of the living areas revealed no clues as to the origin of this attic infestation of the desert dampwood termite. However, a leaky spigot was found on the exterior of the home about 1.2 meters from where the pellets were found in the cabinet. This water leak can best be described as a fast drip which created a small, standing puddle of water adjacent to the exterior foundation of the structure. This water spigot had been leaking for some time because it sustained a growth of lush, green vegetation in the immediate area.

The exterior walls of this structure were covered with stucco which extended below the exterior grade level. It appears that *P. simplicicornis* was able to bridge the gap between the soil and wood members in the wall by constructing pellet tubes behind the stucco. Although a recommendation was made to open the exterior wall adjacent to the interior infested area for further inspection, the homeowner was not receptive to this suggestion. Based on the extent of the damage found in the ceiling joists, it is my belief that possible hidden damage exists in the adjacent wall.

Summary and Conclusions

I have found the desert dampwood termite on two other occasions attacking structures in the Palm Desert and Cathedral City areas. On one of these occasions, damage was done to a window sill and framing. Swarmers emerged inside the

house adjacent to the damaged area and they alerted the homeowner to the problem. On another occasion, this termite was found causing damage to a door frame and its molding. I had earlier ignored these incidences attributing them to stochastic factors. I have also received specimens of the desert dampwood termite from Las Vegas, Nevada where they were reported as having been found damaging construction grade lumber buried in the ground at the base of a mobile home skirting.

All of these records suggest that this termite is now being found more often in structures. In 1934 and 1937, the desert dampwood termite essentially confined its attack to wood below ground (Light 1934, 1937). Weesner (1965) referring to this termite stated that: "These termites apparently have somewhat higher moisture requirements than many species of the Kalotermitidae and are known to damage living trees. This latter habit is probably the chief cause for economic concern." Ebeling (1975) also showed the lack of structural importance of this species when he devoted only two sentences to it in his book on urban entomology.

Substantial urbanization of portions of the Colorado and Mojave deserts have caused large areas of land to be cleared of native vegetation. This is depriving endemic termites of their natural food sources thus forcing them to seek food in and around human habitation. Increased urbanization in the deserts of California is usually accompanied by ample irrigation of the landscape. Former city dwellers, who are now encroaching on the deserts for economic and other reasons, are determined to create an aesthetically pleasing greenery to enhance the quality of their surroundings. In doing so, they are creating conditions which are conducive to the proliferation of the desert dampwood termite. As a result, this termite will likely become a pest of human habitation more frequently in the future.

Pest control operators (PCOs) within the geographic range of the desert dampwood termite are not familiar with this species. Many of them simply call this termite a subterranean termite. PCOs might succeed in controlling the desert dampwood termite using the same techniques, methods, and materials used in controlling subterranean termites because *P. simplicicornis* is a drywood termite with subterranean habits. I believe that the current common name of *P. simplicicornis* (the desert dampwood termite) is a misnomer. It could more aptly be described as the drywood subterranean termite.

At this time, I am not sure that the infestation of the desert dampwood termite described in this paper can be controlled by simply applying a termiticide to the soil. If this property is ever treated to control this infestation, it would be interesting to cut these termites off at soil level with a termiticide soil barrier and then monitor their survival in the ceiling joists.

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